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Surname	Other names

Pearson Edexcel GCE

Centre Number | | | | | |

Candidate Number | | | | |

Music Technology

Advanced
Unit 4: Analysing and Producing

Wednesday 8 June 2016 – Afternoon
Time: 2 hours (plus 10 minutes setting up time)

Paper Reference
6MT04/01

You must have: CD ROM containing component files, blank CD for burning finished tasks, headphones or monitor speakers, computer workstation and music production software.
Supplementary page containing Figure 1 for question 4(b).

Total Marks

Setting up time

1. Open a new project in the music production software using 16 bit/44.1kHz sample rate.
2. Save the project as **unit4_your candidate number (e.g. *unit4_1234*)** in the folder designated by your centre.
3. Set the metronome to **128 bpm**.
4. Import "drums.wav" from the CD ROM to a **stereo** audio track in the music production software, aligned with the beginning of bar 1.
5. Ensure that the drums are audible and play in time with the metronome. The drums begin playing in bar 2.

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Write your answers to Section A in the spaces provided in this question paper.
- You must save your exported audio files for Questions 2 & 3 in Section A, and Question 5 in Section B to your project folder within the 2 hour examination time.
- You must ensure that the left and right earpieces of your headphones are worn correctly.
- Access to the internet or local network is **not** permitted.

Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question*.
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed
  – *you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression*.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

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SECTION A

Answer ALL questions. Write your answers in the spaces provided.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

1 (a) Listen to the hi-hats that begin in bar 10.

(i) Why did the drum programmer leave the hi-hat unquantised?

(1)

.....

(ii) Identify the most appropriate quantise value for this part.

Put a cross ☒ in the correct box.

(1)

☒ **A** 1/24

☒ **B** 1/12

☒ **C** 1/8

☒ **D** 1/4

(b) Notate the kick drum rhythm in **bars 6–9**.

(4)

Import "synth chords.wav" from the CD ROM to a new **stereo** track in your music production software. Ensure that the beginning of this audio track is aligned with the start of bar 1. The synth chords begin at the start of bar 2.

(c) Complete the table below. Identify the chords in **bars 11 and 12**. Identify the notes in each chord. An example is given.

Bar	Chord	Notes in chord
10	***Am***	***A C E***
11	**(1)**	**(1)**
12	**(1)**	**(1)**

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(d) Identify the filter added to the synth chords at the start of **bar 10**.

Put a cross ☒ in the correct box.

(1)

- ☒ **A** Band pass filter
- ☒ **B** High pass filter
- ☒ **C** Low pass filter
- ☒ **D** Notch filter

(e) An effect has been introduced to the synth chords at the start of **bar 14**.

(i) Identify this effect.

(1)

.....

(ii) Describe the settings that would have been used.

Control	Setting
Feedback %	**(1)**
LFO rate in Hz	**(1)**

(Total for Question 1 = 14 marks)

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2 Import the MIDI file "bass.mid" from the CD ROM to a new **MIDI/instrument** track in your music production software. Align the part so that the bass begins playing at the start of bar 2.

Import "bass example.wav" from the CD ROM to a new **mono** audio track in your music production software. The file illustrates how **bars 24–29** of the bass should sound. **You should not use this audio in your final mix.**

(a) Create a bass sound that matches the timbre "bass example.wav".

(i) Ensure that the octave matches the example.

(1)

(ii) Use a square wave with no effects.

(1)

(iii) Ensure the pitchbend range matches the example.

(1)

(iv) Copy the amplitude envelope.

(1)

(v) Copy the filter envelope.

(4)

(b) In the table below, identify the velocity of each note indicated in **bar 32**. An example has been given.

Position	Velocity
Bar 32, beat 1	**127**
Bar 32, beat 2	**(1)**
Bar 32, beat 3	**(1)**

(c) Identify the lowest pitch bend value in **bar 18**.

(1)

.....

(d) What key is the music in?

(1)

.....

Solo the completed bass part. Turn off the metronome click.

Bounce/export the completed bass part as a single 16 bit / 44.1kHz stereo.wav file to the designated folder on your computer.

Name it 'task1_ your candidate number' (e.g. *task1_1234*).

(Total for Question 2 = 12 marks)

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3 Import "vocals.wav" from the CD ROM to a new **mono** track in your music production software. Ensure that the beginning of this audio track is aligned with the start of bar 1. The singing begins on the fourth beat of bar 2.

(a) Reverb has been added to the vocal. Identify the reverb time.

Put a cross ☒ in the correct box.

(1)

☐ **A** 0.5 seconds

☐ **B** 1.0 seconds

☐ **C** 2.0 seconds

☐ **D** 4.0 seconds

(b) Whilst recording, the vocalist was very close to the microphone.

(i) What is the main advantage of placing the vocalist close to the microphone?

(1)

.....

(ii) Identify two problems close mic'ing the vocal could introduce to the recording. How could these problems be reduced during the mix?

(4)

Problem 1

.....

Solution 1

.....

Problem 2

.....

Solution 2

.....

(c) An unwanted tone has been recorded starting at the third beat of **bar 14**. Identify the waveform of this tone.

Put a cross ☒ in the correct box.

(1)

☐ **A** Pulse

☐ **B** Sawtooth

☐ **C** Sine

☐ **D** Square

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(d) (i) On the graph below, draw the waveform identified in part (c).

(1)

(ii) Label the axes.

(2)

(iii) Label the amplitude of the wave.

(1)

(iv) Label the wavelength of the wave.

(1)

(e) On the blank graph below, draw the same wave with the phase inverted.

(1)

(f) Describe what would happen if the waveforms from parts (d) and (e) were added together.

(1)

.....

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(g) Describe a situation where it is important to check the phase of recorded signals.

(2)

.....

.....

.....

(h) Use "wave.wav" from the CD ROM to remove the unwanted tone from the vocal track so that only the singing can be heard.

(4)

Mute the drums, synth chords and bass. Turn off the metronome click.

Bounce/export the completed vocal part as a single 16 bit / 44.1kHz stereo.wav file to the designated folder on your computer.

Name it 'task2_your candidate number' (e.g. *task2_1234*).

(Total for Question 3 = 20 marks)

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4 Answer **EITHER** Question 4(a) **OR** 4(b). You are advised to keep your answer to a maximum of 250 words. You may write in continuous prose, use bullet points, use a table and / or use diagrams to communicate your answer.

Indicate which question you are answering by marking a cross in the box ☒. If you change your mind, put a line through the box ☒ and then indicate your new question with a cross ☒.

Chosen question number: **Question 4(a)** ☐ **Question 4(b)** ☐

EITHER

*****(a) Give an overview of the processes used during mastering. How has the sound of masters changed since 1970?

(16)

OR

*****(b) Figure 1 shows delay, wah-wah and distortion guitar pedals. Explain the function of the pedals and the controls that can be seen in the picture.

Figure 1 is provided on a supplementary page.

(16)

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(Total for Question 4 = 16 marks)

TOTAL FOR SECTION A = 62 MARKS

SECTION B

5 You should now have the following tracks imported on the computer:
drums, synth chords, bass and vocals.

Follow the instructions below to produce a final stereo mix.

(a) Apply automated panning to the **drums**.

- Only **bars 4 and 5** should be affected; all other bars should be panned to the centre.
- The hand clap in **bar 4** should be panned hard left.
- The hand clap in **bar 5** should be panned hard right.
- The bass drum should be panned centre throughout.

(3)

(b) Listen to the automated EQ on the **vocals** in **bars 18–25**. Recreate that EQ in **bars 2–9**. You will need to cut and paste **bars 2–9** on to a new track because applying EQ may reintroduce the unwanted tone.

(3)

(c) Compress the **synth chords**.

- Only **bars 18–25** should be affected.
- The drums should trigger the side-chain of the compressor so that the synth chords part pumps in time with the bass drum.
- The side-chained compression should suit the style of the music.

(3)

(d) Apply a mono delay effect to the **synth chords**.

- Use a crotchet synced delay.
- The delay should fill the gaps in the introduction.
- The delay should be clearly audible.
- Ensure that the delay is not intrusive.

(3)

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(e) Balance the mix.

- Ensure that all of the tracks can be heard clearly.

(3)

(f) Produce a final stereo mix.

- Ensure that the mix output is at as high a level as possible.
- It should be free from distortion.
- **Do not** limit or compress the mix output.
- Ensure that the beginning and the end of the music are not cut off.
- Ensure that silences at the beginning and end do not exceed **one** second.

(3)

Turn off the metronome click.

Bounce/export the completed mix as a single 16 bit / 44.1kHz stereo.wav file to the designated folder on your computer.

Name it 'task3_your candidate number' (e.g. *task3_1234*).

(Total for Question 5 = 18 marks)

TOTAL FOR SECTION B = 18 MARKS
TOTAL FOR PAPER = 80 MARKS

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